

CLAIMS

1. A recombinant animal cell, characterized by being transformed in such a manner that a gene encoding a production amount potentiating factor is introduced into an animal cell.

2. A recombinant animal cell, characterized by being transformed in such a manner that a protein production gene and a gene encoding a production amount potentiating factor are introduced into an animal cell.

3. The recombinant animal cell according to claim 1 or 2, characterized in that the production amount potentiating factor is a factor having caspase activity inhibiting activity and/or protein biosynthesis activity potentiating action.

4. The recombinant animal cell according to claim 3, characterized in that the gene encoding the factor having caspase activity inhibiting activity and/or protein biosynthesis activity potentiating action is selected from the group consisting of a baculovirus P35 gene, a cowpoxvirus crmA gene, a herpesvirus-derived v-FLIP gene, a baculovirus v-IAP gene and an adenovirus Adl4.7 gene which are derived from a virus.

5. The recombinant animal cell according to claim 3, characterized in that the gene encoding the factor having caspase activity inhibiting activity and/or protein biosynthesis activity potentiating action is an IAP family gene having a baculovirus IAP repeat sequence derived from an animal cell and a virus except for baculovirus.

6. The recombinant animal cell according to any one of claims 1 to 5, characterized in that the animal cell is a cell derived from a mammal.

7. The recombinant animal cell according to claim 6, characterized

in that the mammal-derived cell is selected from the group consisting of a Chinese hamster ovary cell (CHO cell), a mouse myeloma cell, a BHK cell, a 293 cell and a COS cell.

8. The recombinant animal cell according to claim 7, characterized in that the mammal-derived cell is any one of a Chinese hamster ovary cell (CHO cell) DG44 strain, a BHK21 strain and a mouse myeloma SP2/0 strain.

9. The recombinant animal cell according to any one of claims 1 to 8, characterized in that an expression vector for expressing a gene encoding both or any one of the protein production gene and the production amount potentiating factor, having a promoter selected from the group consisting of a SV40 early promoter, a SV40 late promoter, a cytomegalovirus promoter and a chicken β -actin promoter, as well as a marker gene selected from the group consisting of an aminoglycoside 3' phosphotransferase (neo) gene, a puromycin resistant gene, a dihydrofolate reductase (dhfr) gene and a glutamine synthesis enzyme (GS) gene.

10. The recombinant animal cell according to any one of claims 1 to 9, characterized in that an expression vector having a chicken β -actin promoter and a baculovirus P35 gene is used.

11. The recombinant animal cell according to any one of claims 1 to 9, characterized in that an expression vector having a cytomegalovirus enhancer and a baculovirus P35 gene is used.

12. The recombinant animal cell according to any one of claims 1 to 11, characterized in that the protein to be produced is a secretion protein.

13. The recombinant animal cell according to claim 12, characterized in that the protein to be produced is ecarin.

14. The recombinant animal cell according to any one of claims 1 to 11, characterized in that the protein to be produced is a protein present in blood.

15. The recombinant animal cell according to claim 12 or 14, characterized in that the protein to be produced is fibrinogen.

16. The recombinant animal cell according to claim 12 or 14, characterized in that the protein to be produced is a factor VIII.

17. The recombinant animal cell according to claim 1 or 2, characterized in that the protein production gene is one gene selected from a fibrinogen gene, an ecarin gene and a factor VIII gene, and the gene encoding the production amount potentiating factor is baculovirus P35.

18. A method for mass-producing a protein by culturing the recombinant animal cell according to any one of claims 1 to 17 by a culturing method under a condition that apoptosis is not induced.

19. The method according to claim 18, characterized in that the culturing method is any one of a fed batch culturing method, a perfusion culturing method and a culturing method using a nutrient-enriched medium.

20. The method according to claim 18 or 19, characterized in that a serum-free medium is used.

21. The method according to any one of claims 18 to 20, characterized in that the protein has a production amount, which can be increased up to about 4000 µg/ml.

22. A method for preparing the protein highly producing recombinant animal cell according to any one of claims 1 to 17, characterized in that the recombinant animal cell is transformed in such a manner that a

protein production gene and a gene encoding a production amount potentiating factor are introduced into an animal cell simultaneously or at different times.

23. A protein which is highly produced with the use of the recombinant animal cell according to any one of claims 1 to 17.